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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/711,587	11/13/2000	Ammar Derraa	MI30-052	8262

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EXAMINER

MEIER, STEPHEN D

ART UNIT	PAPER NUMBER
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2822

DATE MAILED: 06/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/711,587

Applicant(s)

DERRAA, AMMAR

Examiner

Stephen D. Meier

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 53-62 is/are pending in the application.
- 4a) Of the above claim(s) 59 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 53-57 and 59-62 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: ____

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 53-57 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Takemura (5,666,020).

Takemura teaches in Figure 3 an emitter base 20b of single crystalline silicon and an emitter tip 20a of polysilicon (see column 7). Takemura anticipates the claimed invention.

Claims 53-57 and 59-60 are rejected under 35 U.S.C. 102(b) as being anticipated by Jones (5619097).

Jones teaches a structure for a field emitter structure in column 9 first paragraph, which has a base of doped polysilicon which is coated with a low work function of barium or diamond. Also see Figure 107 and columns 21-22 which shows the structure of this invention with base 13 and tip portion 8. Note that the tip is pointed in structure and only the tip is coated with low work function material. Jones clearly anticipates the claimed invention.

Claims 61-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones.

Given Jones disclosure of diamond or barium as a tip coating, any low electron affinity material would have been obvious.

Claim 61 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jones as applied to claims 53-57 and 59-60 above, and further in view of Geis (5729094).

Geis in column 3 teaches the materials of diamond, Group III nitrides such as Boron Nitride, Gallium nitride and silicon carbide to all be suitable wide bandgap materials for electron emission. It would have been obvious to combine the teachings of Jones to optionally use diamond with the teachings of Geis that other wide bandgap materials such as diamond or boron nitride wide bandgap materials make good electron emission materials in order to have an easily formable structure with a silicon base and an electron emissive coating.

Claim 62 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jones as applied to claims 53-57 and 59-60 above, and further in view of Hirabayashi (5202571).

Hirabayashi teaches a coating of cesium or cesium oxide because of its known properties of a low work function suitable for electron emission. It would have been obvious to combine the teachings of Hirabayashi with Jones by using cesium instead of the optional coating of diamond or barium for electron emission in order to have an efficient emissive cathode.

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Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Stephen Meier whose telephone number is (703) 308-4896. The Examiner is off on the first Friday of each biweek, however can generally be reached Monday through Friday during normal business hours, including first Fridays of the biweek.

Any inquiry of a general nature or relating to the status of this application should be directed to the group receptionist whose telephone number is (703) 308-0956. The fax number for the group is (703) 308-0725.

Meier
June 9, 2003



Stephen D. Meier
Primary Examiner
Art Unit 2822